

We claim:

1. A method of rendering an output image on an output device at a first resolution using a rendering device limited to rendering to a second resolution, said second resolution being lower than said first resolution, said method comprising the steps of:

segmenting said output image into a plurality of sub-areas, wherein each sub-area is capable of being rendered by said rendering device at said second resolution;

rendering of each sub-area by said rendering device at a resolution not more than said second resolution;

combining said rendered sub-areas to form a band of said output image; and

outputting said band on said output device at said first resolution.

2. A method according to claim 1, wherein said rendering device has a primary function that excludes rendering to said output device.

3. A method according to claim 2, wherein said rendering device's primary function is rendering to a display device.

4. A method according to claim 3, wherein said second resolution substantially corresponds to a resolution of said display device.

5. A method according to claim 1, wherein said rendering step comprises the further steps of:

modifying a view transform of said output image to correspond with a corresponding sub-area;

building rendering instructions for said view transform of said output image; and
converting said rendering instructions to image data.

6. A method according to claim 5 comprising the further step of:

5 colour converting said image data to form raster data for outputting on said output
device.

7. A method according to claim 6, wherein said output device is a printer and
said raster data is interleaved with printer codes before outputting to said output device.

10

8. A method according to claim 1 comprising an initial step of setting a sub-area
height limit, said sub-area height being limited by available storage for storing said band.

15

9. A method of rendering an output image on a raster scanned device at a first
resolution, said method comprising the steps of:

segmenting said output image into a plurality of sub-areas, said sub-areas having a
second resolution and said second resolution being lower than said first resolution,
wherein longitudinal sub-areas form bands;

20 sequentially rendering image data for said sub-areas at a second resolution and by
a rendering device limited to said second resolution;

upon each of said sub-areas being rendered, transferring said image data to a band
buffer;

colour converting said image data to form raster data suitable for said raster
scanned device; and

25 upon all sub-areas of a current band being transferred into said band buffer,
transferring said raster data of said current band to said raster scanned device.

10. A method according to claim 9, wherein said rendering device has a primary function that excludes rendering to said raster scanned device.

5 11. A method according to claim 10, wherein said rendering device's primary function is rendering to a display device.

12. A method according to claim 9, wherein said rendering step comprises the further steps of:

10 modifying a view transform of said output image to correspond with a corresponding sub-area;

 building rendering instructions for said view transform of said image; and
 converting said rendering instructions to image data.

15 13. A method according to claim 12 comprising the final step of restoring said view transform.

14. A method according to claim 8, wherein said raster data is interleaved with printer codes before transfer to said raster scanned device.

20

15. A method according to claim 9 comprising an initial step of setting a sub-area height limit, said sub-area height being limited by said band buffer.

16. A method according to claim 9, wherein said raster data is serially transferred
25 to said raster scanned device.

17. A method according to claim 9, wherein said colour converting step is performed concurrently with rendering of a next sub-area.

18. An apparatus for rendering an output image on an output device at a first
5 resolution, said apparatus comprising:

a first processor for segmenting said output image into a plurality of sub-areas, each sub-area having a second resolution and said second resolution being lower than said first resolution;

a second processor for rendering each sub-area at said second resolution, said
10 second processor having a resolution limit sufficient for rendering said second resolution, but less than said first resolution,;

means for combining said rendered sub-areas to form a band of said output image;
and

means for outputting said band on said output device at said first resolution.
15

19. An apparatus according to claim 18, wherein said second processor has a primary function that excludes rendering for output to said output device.

20. An apparatus as claimed in claim 19, wherein said second processor's primary
20 function is rendering to a display device.

21. An apparatus according to claim 18, wherein said sub-areas have a height limit determined by available storage for storing said band.

22. An apparatus according to claim 18 further comprising a third processor for
25 receiving said band of said output image and controlling the transfer of said band of said

output image to said output device.

23. An apparatus according to claim 18 further comprising:

colour converting means for colour converting image data to form raster data for
5 outputting on said output device.

24. An apparatus according to claim 23, wherein said output device is a printer,
said apparatus further comprising means for interleaving said raster data with printer
codes.

10

25. An apparatus according to claim 18, wherein said second processor renders
said image data into a locally addressable rendering memory.

15

26. An apparatus according to claim 18, wherein said apparatus is a game
console.

27. An apparatus for rendering an output image on a raster scanned device at a
first resolution, said apparatus comprising:

a first processor for segmenting said output image into a plurality of sub-areas,
20 and generating rendering instructions for sub-areas, said sub-areas having a second
resolution and said second resolution being lower than said first resolution, wherein
longitudinal sub-areas form bands;

a second processor for receiving said rendering instructions from said first
processor, and rendering image data for said sub-areas at said second resolution, said
25 second processor having a resolution limit sufficient for rendering said second resolution,
but less than said first resolution;

memory means for storing sub-area image data into a band buffer;

colour converting means for colour converting said image data to form raster data suitable for said raster scanned device; and

data transfer means for transferring said raster data of a current band to said raster scanned device, upon all sub-areas of said current band being transferred into said band buffer.

28. An apparatus as claimed in claim 27, wherein said second processor has a primary function that excludes rendering to said raster scanned device.

29. An apparatus as claimed in claim 28, wherein said second processor's primary function is rendering to a display device.

30. An apparatus according to claim 27, wherein said apparatus is a game console.

31. An apparatus according to claim 27, wherein said second processor renders said image data into a locally addressable rendering memory.

32. An apparatus according to claim 27, wherein said memory means is locally addressable by said first processor.

33. An apparatus according to claim 27 further comprising a third processor for receiving said raster data of said current band and controlling the transfer of said raster data to said raster scanned device.

34. An apparatus according to claim 27 wherein said first processor interleaves printer codes with said raster data, before said data transfer means transfers said interleaved raster data to said raster scanned device.

5 35. An apparatus according to claim 33 wherein said third processor interleaves printer codes with said raster data.

36. An apparatus according to claim 27 wherein said raster data is serially transferred to said raster scanned device.

10

37. An apparatus according to claim 27 wherein said colour converting means converts said image data concurrently with said second processor rendering of a next sub-area.

15

38. An apparatus according to claim 27 wherein said sub-areas have a height limit determined by said memory means.

39. A computer readable medium, having a program recorded thereon, where the program is configured to make a computer execute a procedure to render an output image on an output device at a first resolution using a rendering device limited to rendering to a second resolution, said second resolution being lower than said first resolution, said program comprising:

code for segmenting said output image into a plurality of sub-areas, wherein each sub-area is capable of being rendered by said rendering device at said second resolution;

25 code for rendering of each sub-area by said rendering device at a resolution not more than said second resolution;

code for combining said rendered sub-areas to form a band of said output image;
and
code for outputting said band on said output device at said first resolution.

5 40. A computer readable medium, having a program recorded thereon, where the
program is configured to make a computer execute a procedure to render an output image
on a raster scanned device at a first resolution, said program comprising:

code for segmenting said output image into a plurality of sub-areas, said sub-areas
having a second resolution and said second resolution being lower than said first
10 resolution, wherein longitudinal sub-areas form bands;

code for sequentially rendering image data for said sub-areas at a second
resolution and by a rendering device limited to said second resolution;

code for upon each of said sub-areas being rendered, transferring said image data
to a band buffer;

15 code for colour converting said image data to form raster data suitable for said
raster scanned device; and

upon all sub-areas of a current band being transferred into said band buffer, code
for transferring said raster data of said current band to said raster scanned device.